SERVICE MANUAL & PARTS LIST (without price)

PR-420A (ZX-516C)
DR-1212LA (ZX-516D)

DEC. 1995

PR-420A

INDEX

CASIO®

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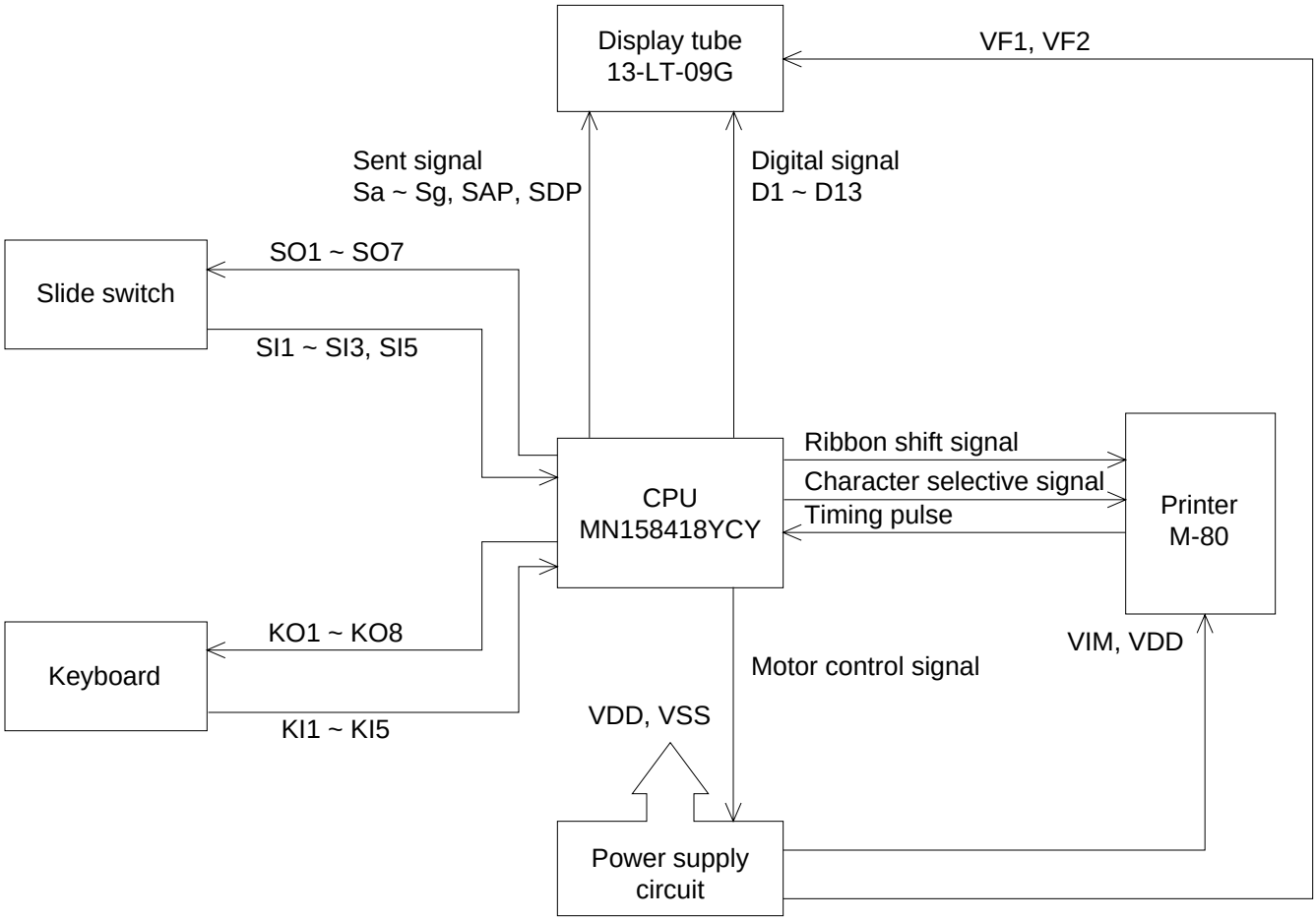
1. SPECIFICATIONS

Roll paper size : Width: 57 ~ 58 mm
Ink ribbon : Red/Black: RB-02
Green/Black: GB-02
Power source : AC 100, 120, 220 or 240 (±10 V), 50/60 Hz

• Refer to the operation manual for other specifications.

2. BLOCK DIAGRAM



3. CPU (MN158418YCY) PIN FUNCTION

Pin No.	Signal	I/O	Function
1~7, 64	P00~P13	Out	Common signal for keyboard
8~12	P20~P22, P32, P33	In	Key signal from keyboard
13	IRQ	In	Timing pulse signal from printer
14	DEBIN	In	Reset pulse (Not used)
15	IRQCNT	In	Auxiliary timing (VDD)
16	P40	Out	Motor control signal
17	P41	Out	Ribbon shift signal for printer
18~30	P42, P43, P50~P53, P70~P73, P80~P82	Out	Character selective signal for printer
31, 32	P83, P90	Out	Segment signal for display, Character selective signal for printer
33~39	P91~P93 PA0~PA3	Out	Common signal for slide switch, Segment signal for display
40	P60	In	Input port (VDD)
41~43	P61~P63	In	Signal from slide switch
44~56	PB0~PB3, PC0~PC3, PD0~PD3, PE0	Out	Digit signal for display
57	VPP	In	GND terminal
58	VDD	In	VDD terminal (+33 V)
59, 60	OSC1, OSC2	I/O	Clock signal for CPU
61	VSS	In	VSS terminal (+28 V)
62	SYNC	—	Not used
63	RST	In	Signal from slide switch, Reset signal

4. DIAGNOSTICS

PW	F	D	OPERATION	DISPLAY	PRINT OUT
ON	F	6	1 00 TM	100^{0}	
ON	F	6	C	0.	
ON	F	6	8 0 ÷ 9 % +/– ◊/#	-888.888888888	
ON	F	6	▷	-888.88888888	
ON	CUT	6	CA	0.	
ON	CUT	6	• 1 2 3 4 5 6 7	0.1234567	
ON	CUT	6	M+	M 0.123456	
ON	CUT	4	M+	M 0.1234	
ON	UP	3	M–	M 0.124	
ON	5/4	2	÷ 5 MU/MD	M 0.12	
ON	5/4	1	+	M 0.1	
ON	5/4	0	+	M 0.	
ON	5/4	ADD ×	M◊	M 0.123	
ON	5/4	ADD ×	M*	0.123	
PRINT	5/4	ADD ×	CA 1 ÷ ÷ 1 =	K 0.01	– 888•8888888

PW	F	D	OPERATION	DISPLAY	PRINT OUT
PRINT	5/4	ADD +	· 1 – 1 –	-0.02	• • 0 • •
PRINT	5/4	ADD +	◊/#	-0.02	1 • ÷ 1 • ÷ ÷
ITEM +	5/4	ADD +	◊/#	-0.02	0 • 0 1 ÷ 1 • = 0 • 0 1
ITEM +/–	5/4	ADD +	–	-0.03	0 • 0 1 × – 1 • =
ITEM +/–	5/4	ADD +	IT	001	– 0 • 01 + 0 • 0 1 –
ITEM +/–	5/4	ADD +	✻	-0.03	– 0 • 0 2 ◊ 0 0 2
ITEM +/–	5/4	ADD +	G✻	-0.03	– 0 • 0 2 ◊ 0 • 0 1 –
OFF	F	6		No Display	0 0 1 0 0 1
					– 0 • 0 3 ✻ 0 0 1 – 0 • 0 3 G✻

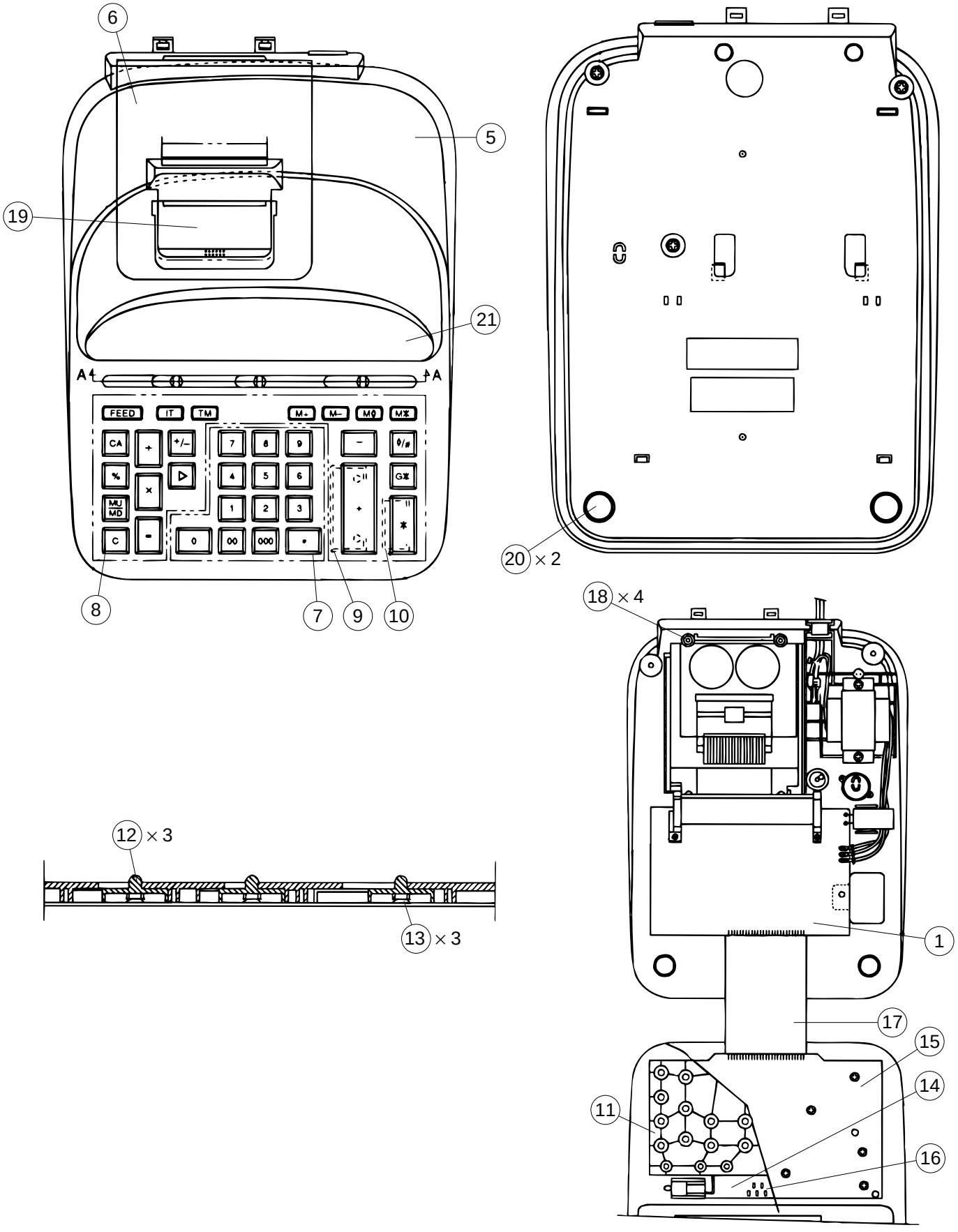
3. OPERATION CHECK

NO.	OPERATION	DISPLAY	NOTE
1	[AC]	MAIN MENU COMP BASE SD REG MAT GRAPH EQUA PRGM LINK CONT RESET	
2	[RESET]	******** * RESET * ******** RESET ALL MEMORIES? [YES] RESET ALL [NO]	
3	[F1]	******** * * * RESET * * ALL MEMORIES! * * * * * ********	
4	[SHIFT] [AC]	No Display	
5	[F6] [$a^b/_c$] [AC] Press the above keys at the same time.	== Lx375 TEST == 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	
6	[1]	No Display	

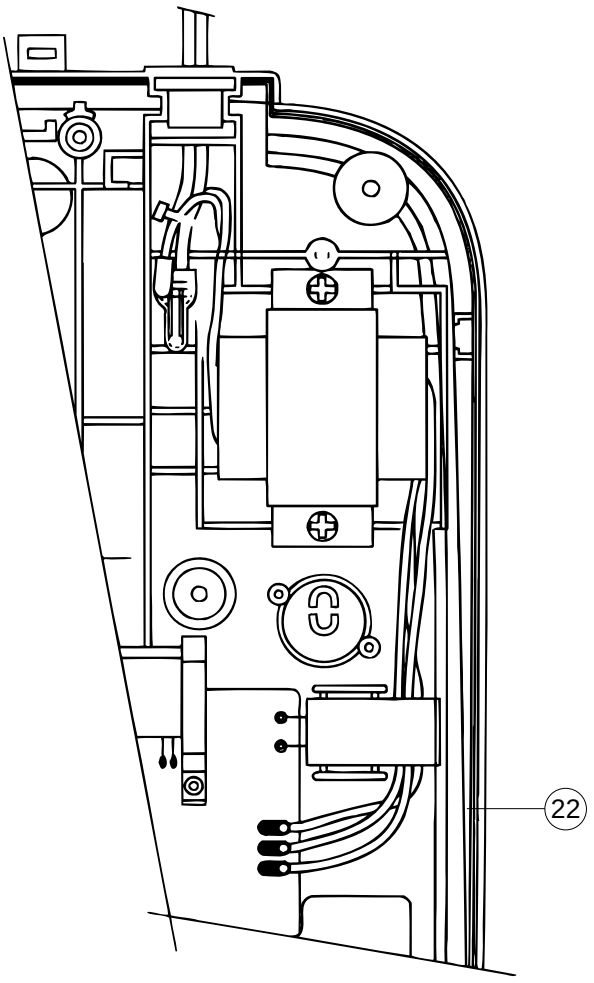
5. TROUBLESHOOTING

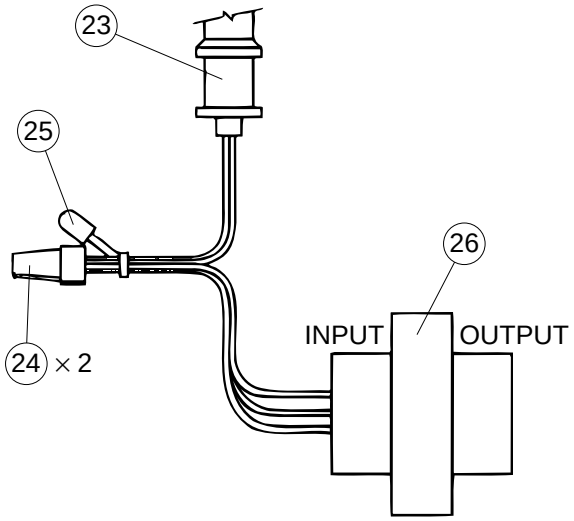
Trouble	Cause	Checkpoint	Note
1) Does not work at all.	• Defective power transformer	Secondary voltage of transformer	VDD, VSS, VM, VF1, and VF2 are OK?
	• Defective LSI	Waveforms of each pin	
2) No display.	• No voltage at VF1, VF2	VF1, VF2	
	• No digit signal or no segment signal	Signal D1 ~ S1 ~	Check the pulse signals from LSI.
	• Defective display tube		If VF1, VF2, Digit and Segment signals are OK.
3) No print.	• Poor voltage VM		VM=17V (while printing)
	• Defective motor		
4) Poor display.	• Defective LSI		
	• Short or open circuits between digit signals and segment signals.	Between LSI and display tube	
	• Defective display tube		
5) Poor printing • Motor does not stop.	• Timing signal is bad.		Check detector of printer block and timing signal.
• Missing of digits.	• Defective printer magnet		
	• Refer to the printer service manual published separately.		

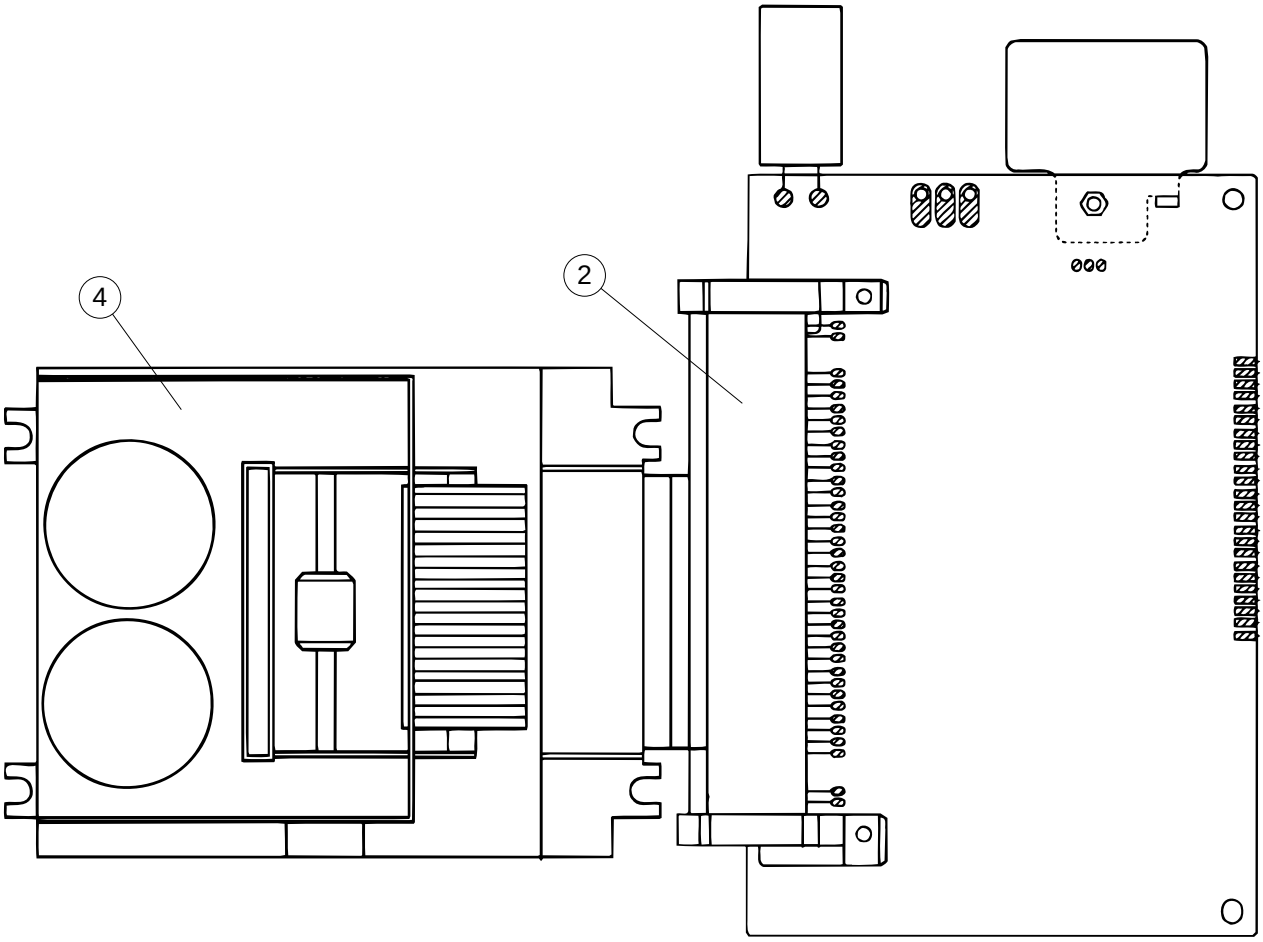
6. DISASSEMBLY VIEW



Voltage	Connection	
	Power Cord	Transformer
100V	Projection side	Yellow
	Black	Black
120V	Projection side	Blue
	Marking side	Black
220V	Brown	Black
	Blue	White
240V	Brown	Black
	Blue	Red



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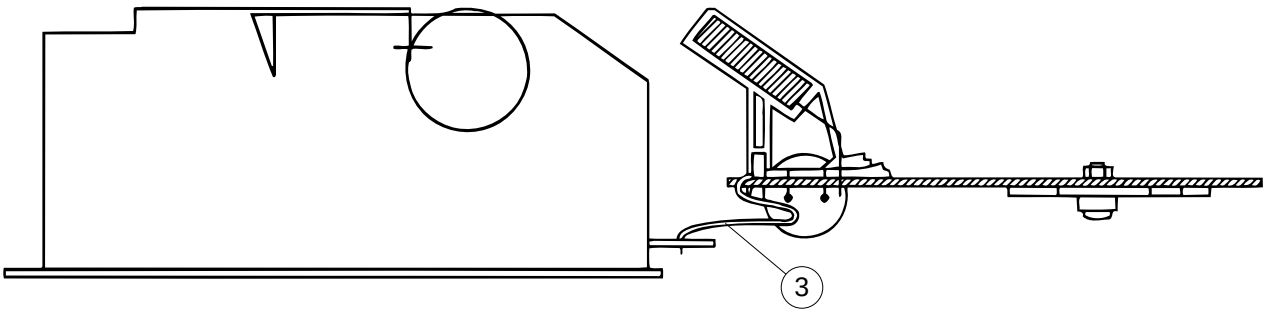
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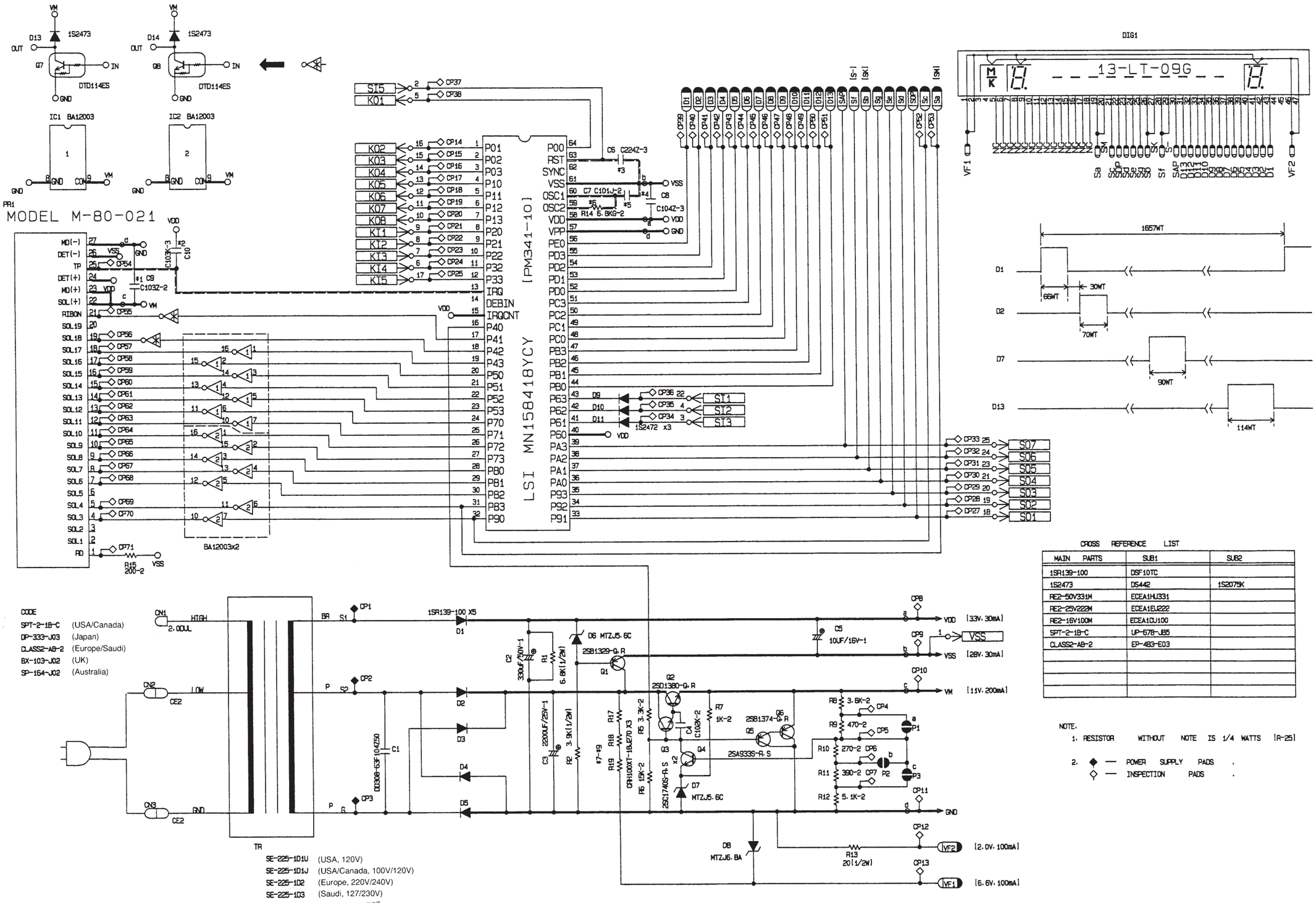
7. SCHEMATIC DIAGRAM

7-1. Main PCB (ZX-516)



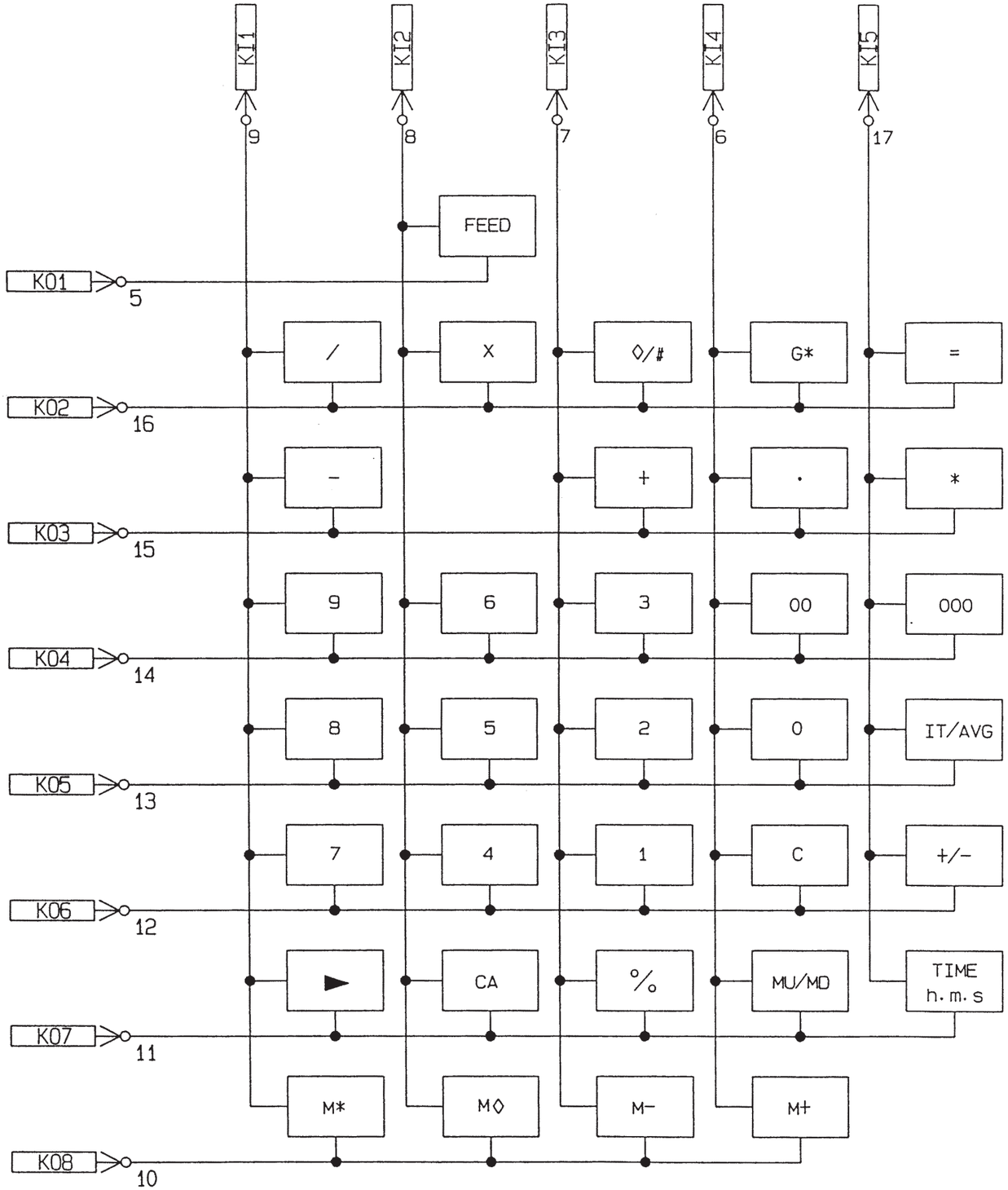
CROSS REFERENCE LIST

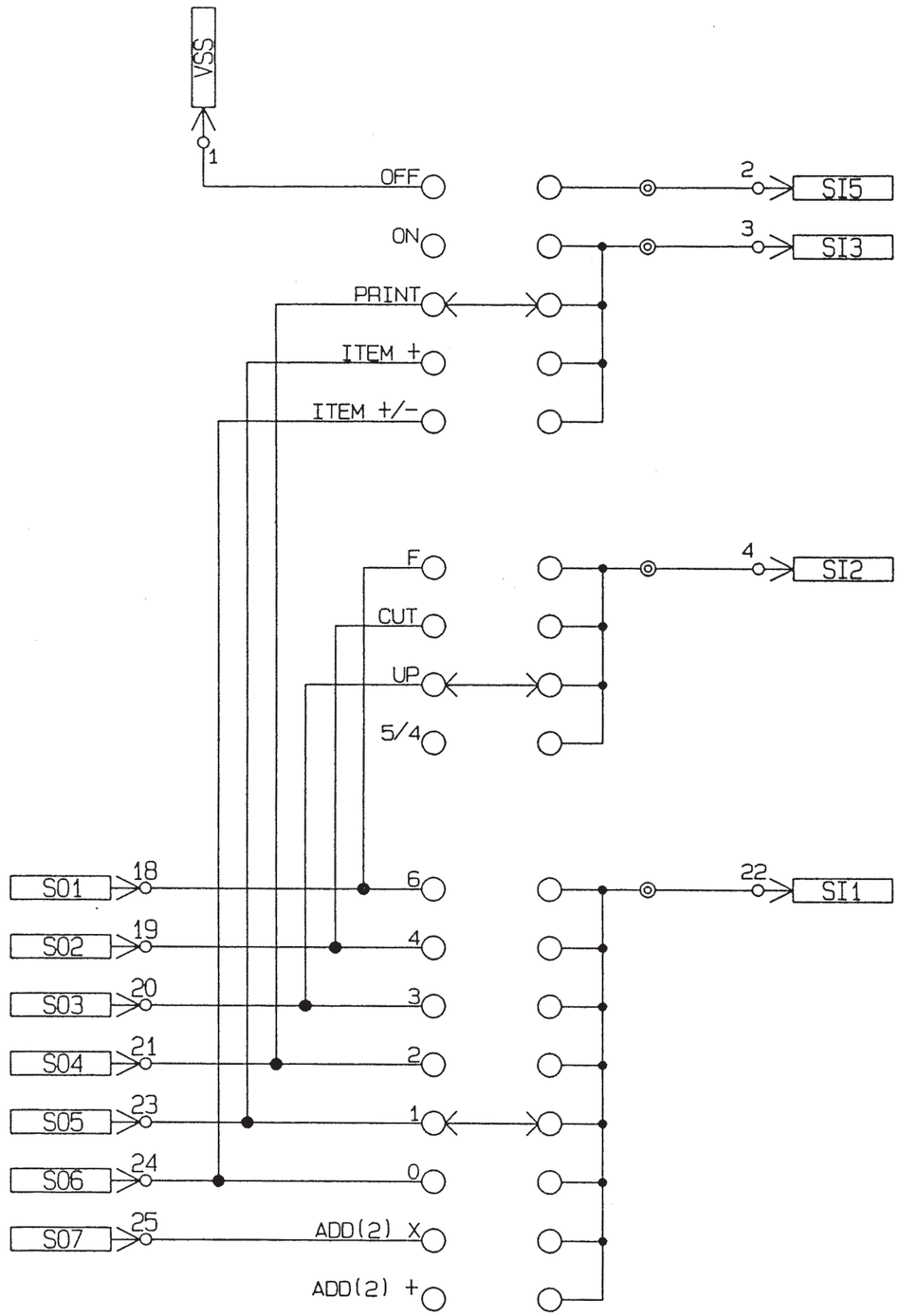
MAIN PARTS	SUB1	SUB2
1SR139-100	DSF10TC	
1S2473	DS442	1S2075K
RE2-50V331M	ECEA1HU331	
RE2-25V222M	ECEA1EU222	
RE2-16V100M	ECEA1CU100	
SPT-2-1B-C	UP-678-JB5	
CLASS2-AB-2	EP-483-E03	

NOTE.

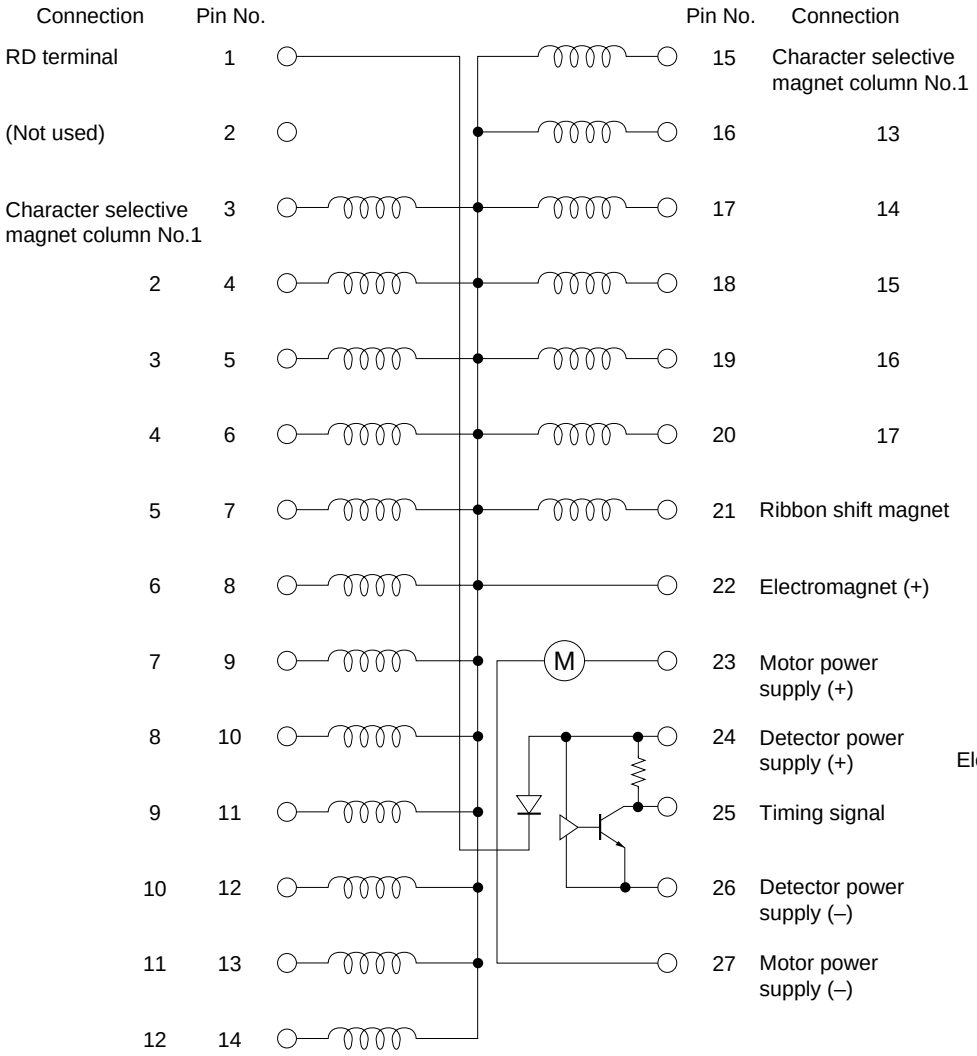
1. RESISTOR WITHOUT NOTE IS 1/4 WATTS [R-25]
2. ◆ — POWER SUPPLY PADS .
   ◇ — INSPECTION PADS .

7-2. Key Matrix



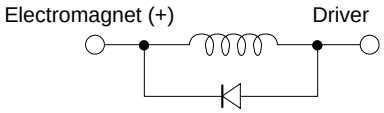


7-3. Printer Pin Arrangement Diagram

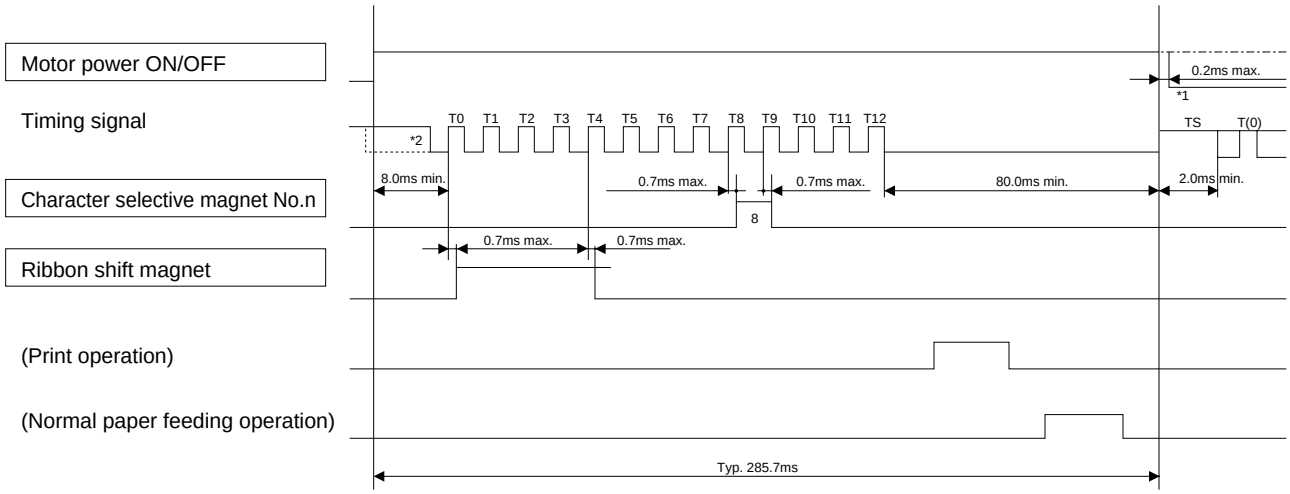


Notes:

1. Column numbers match the physical arrangement of the columns on the print wheels.
2. Column numbers are assigned from 1 to 18 from the frame motor side.
3. Pin numbers are assigned from 1 to 27 from the frame motor side.
4. The spark arrestor diode is connected as shown below.



(Example of compatible diode: 1S2075K or equivalent)



Notes:

1. The signals in ☐ must be prepared by the user.
2. The pulse is indicated by a dot-dash line (*1) is generated for continuous printing. The next print cycle can start immediately after the leading edge of the timing signal Ts.
3. As shown by a dashed line (*2), the timing signal may go low at motor power-on or upon reception of a Print command.

8. PARTS LIST

N	Item	Code No.	Parts Name	Specification	Q'ty A	Q'ty B	M	R
		PCB Z516-1 ASS'Y						
	LSI	2012 1295	LSI	MN158418YCY	1	1	1	B
	IC1, 2	2114 2436	Mos IC	BA12003	2	2	5	B
	Q1	2251 0525	Transistor	2SB1329-Q,R	1	1	10	B
	Q3, 4	2252 0896	Transistor	2SC1740S-R,S	2	2	20	B
	Q5	2250 0672	Transistor	2SA933S-R,S	1	1	20	B
	Q6	2251 0581	Transistor	2SB1374-Q,R	1	1	10	B
	Q7, 8	2259 1449	Digital transistor	DTD114ES	2	2	20	B
	D1~5	2390 0378	Diode	1SR139-100T-32-T	5	5	20	C
	D6,7	2360 1946	Zener diode	MTZJ5.6CT-77-T	3	3	20	C
	D8	2360 1519	Zener diode	MTZJ6.8AT-77-T	1	1	20	C
	D9~11	2301 0054	Diode	1S2472-T-77-T	3	3	20	C
	D13, 14	2301 0101	Diode	1S2473-T-77-T	2	2	20	C
		The following elecrical parts will be not supplied from CASIO.						
	C1, 8		Semiconductive capacitor	0.1uF, 50V, +20/-80%	2	2		
	C2		Electrolytic capacitor	330uF, 50V	1	1		
	C4		Ceramic capacitor	1pF, 50V, ±10%	1	1		
	C5		Electrolytic capacitor	10uF, 16V	1	1		
	C6		Semiconductive capacitor	0.22uF, 12V, +20/-80%	1	1		
	C7		Ceramic capacitor	10pF, 50V, ±5%	1	1		
	C9,10		Ceramic capacitor	0.01uF, 50V, +20/-80%	2	2		
	R1		Carbon film resistor	6.8Kohm, 1/2W, ±5%	1	1		
	R2		Carbon film resistor	3.9Kohm, 1/2W, ±5%	1	1		
	R5		Carbon film resistor	3.3Kohm, 1/4W, ±5%	1	1		
	R6		Carbon film resistor	15Kohm, 1/4W, ±5%	1	1		
	R7		Carbon film resistor	1Kohm, 1/4W, ±5%	1	1		
	R8		Carbon film resistor	3.6Kohm, 1/4W, ±5%	1	1		
	R9		Carbon film resistor	470ohm, 1/4W, ±5%	1	1		
	R10		Carbon film resistor	270ohm, 1/4W, ±5%	1	1		
	R11		Carbon film resistor	390ohm, 1/4W, ±5%	1	1		
	R12		Carbon film resistor	5.1Kohm, 1/4W, ±5%	1	1		
	R13		Carbon film resistor	20ohm, 1/2W, ±5%	1	1		
	R14		Carbon film resistor	6.8Kohm, 1/4W, ±2%	1	1		
	R15		Carbon film resistor	200ohm, 1/4W, ±5%	1	1		
	R17~19		Metal film resistor	270ohm, 1W, ±5%	3	3		
N	1	6416 0370	PCB Z516-1 Ass'y (This ass'y contains the above parts as its element.)	P240043A*1	1	1	1	B
		PCB UNIT						
N	1	6416 0370	PCB Z516-1 Ass'y	P240043A*1	1	1	1	B
	2	3301 0336	Display tube	13-LT-09G	1	1	1	A
	3	6054 3980	PC joiner B-L235	P310141-13	1	1	1	C
	4	1014 8290	Digital printer	M-80-021	1	1	1	A
	C3	2803 8199	Electrolytic capacitor	RE2-25V222M-T50	1	1	5	C

Notes:
N – New parts
M – Minimum order/supply quantity
R – Rank
Q – Quantity used per unit

R – A : Essential
B : Stock recommended
C : Others
X : No stock recommended

A : DR-1212LA
B : DR-420A

N	Item	Code No.	Parts Name	Specification	Q'ty A	Q'ty B	M	R
	Q2	2253 0469	Transistor	2SD1380-QR	1	1	5	C
		COMPONENTS						
	5	6054 3810	Upper case L235	P110171-1	1	0	1	X
	5	6054 5970	Upper case L235C	P110171-3	0	1	1	X
	6	6054 3840	Printer cover L235	P210405-1	1	0	1	C
	6	6054 5990	Printer cover L235C	P210405-3	0	1	1	C
	7	6054 1980	Ten key ass'y	P310391*1	1	1	1	C
	8	6054 3860	Function key ass'y	P310424*1	1	1	1	C
	9	6054 3880	Hang A-L235	P410126-3	1	1	10	X
	10	6054 3890	Hang C-L235	P410127-3	1	1	10	X
	11	6054 3900	Key rubber L235	P110166-1	1	1	1	C
	12	6054 3920	Switch knob L235	P310411-1	3	0	10	C
	12	6054 6000	Switch knob L235C	P310411-3	0	3	10	C
	13	6329 8310	Switch spring G310	P45208-1	3	3	20	C
	14	6054 3870	Common film L235	P310409-1	1	1	10	B
	15	4311 7040	PCB-L235-E4 (Keyboard)	P210401-1	1	1	1	B
	16	6054 3930	Spacer L235	P310410-1	1	1	10	X
	17	6054 3940	PC joiner A-L235	P310141-12	1	1	1	C
	18	6389 3307	Printer cushion	M4K3791	4	4	10	X
	19	6054 3850	Paper cutter L235	P310414-1	1	1	1	B
	20	6054 3950	Rubber foot L235	P410035-5	2	2	10	X
N	21	6416 0490	Display panel Z516DYL	P210404-8	1	0	5	C
N	21	6416 0450	Display panel Z516CYU	P210404-7	0	1	1	C
	22	6054 3960	Lower case L235	P110172-1	1	0	1	X
	22	6054 6020	Lower case L235C	P110172-3	0	1	1	X
	23	3701 0308	Power cord (USA/CANADA)	SPT-2-1B-C	1	1	1	C
	23	3701 0329	Power cord (Europe)	CLASS2-AB-2	1	0	1	C
	24	5530 0526	Terminal connector	CE2	2	2	10	X
	25	3680 1131	Terminal cap	2.0DUL	1	0	10	X
	26	3012 1316	Power transformer	SE-225-1D1J	1	0	1	B
	26	3012 1337	Power transformer	SE-225-1D1U	0	1	1	B
	26	3012 1323	Power transformer	SE-225-1D2	1	0	1	B
		OTHERS						
		6053 4450	Roll arm L-V985	P310270-1	1	0	10	A
		6053 4460	Roll arm R-V985	P310269-1	1	0	10	A
		6053 9050	Roll arm L-V298C	P310270-3	0	1	10	A
		6053 9060	Roll arm R-V298C	P310269-3	0	1	10	A
		Parts prices will be informed separately by Parts Price List.						

Notes: N – New parts
M – Minimum order/supply quantity
R – Rank
Q – Quantity used per unit

R – A : Essential
B : Stock recommended
C : Others
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A : DR-1212LA
B : DR-420A

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